

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 1-10 and ADD new claims 11-22 in accordance with the following:

1-10. (Cancelled)

11. (New) A method of backing up data stored in a first virtual storage associated with a source physical storage via a first address correspondence table into a target medium, comprising:

creating a second virtual storage associated with a backup physical storage substantially equal to a size of actual data stored in the first virtual storage;

creating a second address correspondence table between the first virtual storage and the second virtual storage based on the first address correspondence table and a third address correspondence table between the second virtual storage and the backup physical storage;

copying the actual data from the source physical storage to the backup physical storage based on the first, second and third address correspondence tables; and

backing up all the actual data from the backup physical storage to the target medium.

12. (New) The method as claimed in claim 11, wherein the backing up all the actual data comprises recording the first and second address correspondence tables in the target medium.

13. (New) The method as claimed in claim 11, wherein the first address correspondence table comprises one or more correspondence records between logical addresses of the first virtual storage and block addresses of the source physical storage, and the second address correspondence table comprises one or more correspondence records between logical addresses of the first virtual storage and logical addresses of the second virtual storage, and the third address correspondence table comprises one or more correspondence records between logical addresses of the second virtual storage and block addresses of the

backup physical storage.

14. (New) The method as claimed in claim 12, wherein the creating a second address correspondence table comprises removing correspondence records corresponding to one or more unused block addresses of the source physical storage from the first address correspondence table.

15. (New) A virtual storage system for backing up data in a target medium, comprising:

- a first storage virtually storing data including actual data;

- a source physical storage physically storing data including actual data, wherein said source physical storage associated with the first virtual storage via a first address correspondence table;

- a second virtual storage virtually storing actual data copied from the first virtual storage, wherein said second virtual storage is associated with the first virtual storage via a second address correspondence table; and

- a backup physical storage physically storing actual data copied from the source physical storage, wherein the backup physical storage is associated with the second virtual storage via a third address correspondence table, wherein

- all the actual data is backed up from the backup physical storage to the target medium.

16. (New) The virtual storage system as claimed in claim 15, wherein the target medium further physically stores the first and second address correspondence tables.

17. (New) The virtual storage system as claimed in claim 15, wherein the first address correspondence table comprises one or more correspondence records between logical addresses of the first virtual storage and block addresses of the source physical storage, and the second address correspondence table comprises one or more correspondence records between logical addresses of the first virtual storage and logical addresses of the second virtual storage, and the third address correspondence table comprises one or more correspondence records between logical addresses of the second virtual storage and block addresses of the backup physical storage.

18. (New) The virtual storage system as claimed in claim 16, wherein the second address correspondence table is created by removing correspondence records corresponding to one or more unused block addresses of the source physical storage from the first address correspondence table.

19. (New) A computer-readable medium storing instructions to back up data stored in a first virtual storage associated with a source physical storage via a first address correspondence table in a target medium, which when executed by one or more processors, cause the one or more processors to execute:

creating a second virtual storage associated with a backup physical storage substantially equal to a size of actual data stored in the first virtual storage;

creating a second address correspondence table between the first virtual storage and the second virtual storage based on the first address correspondence table and a third address correspondence table between the second virtual storage and the backup physical storage;

copying the actual data from the source physical storage to the backup physical storage based on the first, second and third address correspondence tables; and

backing up all the actual data from the backup physical storage to the target medium.

20. (New) The computer-readable medium as claimed in claim 19, wherein the backing up all the actual data comprises recording the first and second address correspondence tables in the target medium.

21. (New) The computer-readable medium as claimed in claim 19, wherein the first address correspondence table comprises one or more correspondence records between logical addresses of the first virtual storage and block addresses of the source physical storage, and the second address correspondence table comprises one or more correspondence records between logical addresses of the first virtual storage and logical addresses of the second virtual storage, and the third address correspondence table comprises one or more correspondence records between logical addresses of the second virtual storage and block addresses of the backup physical storage.

22. (New) The computer-readable medium as claimed in claim 20, wherein the act of creating a second address correspondence table comprises removing correspondence records corresponding to one or more unused block addresses of the source physical storage from the first address correspondence table.